

MOON LAKE



Introduction

Moon Lake is a large natural lake which was enlarged by an earth filled dam in 1938. It is located on the south slope of the Uintas. It is an impoundment of the Lake Fork Creek and Brown Duck Creek which are typical of many rivers that drain the south slopes in valleys carved by

glacial meltwaters.

The dam was built by the Bureau of Reclamation, using federal funds to subsidize agriculture in the Uinta Basin. The reservoir is a popular access to the High Uintas Wilderness Area, which surrounds the northern half of the lake and encompasses much of the watershed.

Characteristics and Morphometry

Lake elevation (meters / feet)	2,463 / 8,083
Surface area (hectares / acres)	311 / 768
Watershed area (hectares / acres)	27,984 / 69,120
Volume (m ³ / acre-feet)	
capacity	44,110,028 / 35,760
conservation pool	0
Annual inflow (m ³ / acre-feet)	21,549,245 / 17,470
Retention time (years)	2
Drawdown (m ³ / acre-feet)	19,254,964 / 15,610
Depth (meters / feet)	
maximum	22.2 / 72.8
mean	14.1 / 46.3
Length (meters / feet)	5,880 / 19,292
Width (meters / feet)	1,200 / 3,937
Shoreline (km / miles)	12.55 / 7.8

Location

County	Duchesne
Longitude / Latitude	110 30 21 / 40 34 46
USGS Map	Kidney Lake, 1967, Lake Fork Mtn, 1967
DeLorme's Utah Atlas & Gazetteer™	Page 55, C-5
Cataloging Unit	Duchesne (14060003)

The reservoir shoreline is entirely publicly owned, and public access is unrestricted. Water is used primarily for irrigation and recreation, but a small hydroelectric generating plant owned by the Moon Lake Water Users Association utilized the discharge water to generate electricity. Currently with stable human populations in the Uinta Basin, water is unlikely to be used for culinary

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purposes.

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Recreation

Moon Lake is accessible from Mountain Home in the Uinta Basin (north of Duchesne). Go north out of Mountain Home across the Indian Reservation. The road turns to gravel just past Mountain Home, but is paved after it enters the National Forest. This road leads directly to the reservoir, which is about 15 miles northwest of Mountain Home.

Fishing, boating, swimming, camping, picnicking, and water skiing are all popular. There is an unimproved public boat ramp at the lake. Care must be taken when attempting to launch a boat because of the sandy nature of the beach area. Vehicles can quickly sink into the sandy base so exercise caution and utilized metal ramp pads if they available.

Moon Lake Campground, a USFS facility, has 57 campsites, toilets, and picnic areas.



Moon Lake Resort has lodging, a convenience store, boat rentals, and a volleyball court (see info box).

Watershed Description

Moon Lake is an located on the Lake Fork River in its deep glacial valley on the south slope of the High Uintas. The valley is 0.5 miles wide and up to 2,000 feet deep, with slopes of 50 - 100%. It is narrow and deep, the result of tens of square miles of glaciers all flowing out the Lake Fork. This valley is morphologically similar to many others along the south slope, including the Duchesne River, Rock Creek, the Yellowstone River and the Uinta River. The valley walls are thickly forested, and beyond the midway point of the lake are permanently protected as part of the High Uintas Wilderness.

The watershed includes about 80 square miles of the Uintas, stretching from the reservoir to the ridgeline. Much of the area is made up of forested areas interspersed with lakes and meadows. These areas are where glaciers left uneven terrain as they flowed, and deposited piles of moraine when they melted. The glaciated area is

interdigitated with the barren ridges that were not scoured by glaciers. The Lake Fork valley is at 8,000 feet elevation at Moon Lake, while the forests are at 9,000 to 11,000 feet in elevation, and the mountains are up to 13,000 feet elevation. The watershed high point, Mt. Lovenia, is 4,029 m (13,219 ft) above sea level, thereby developing a complex slope of 8% to the reservoir. The average stream gradient is 5% (265 feet per mile).

The watershed is made up of high mountains with abundant rock outcroppings. The soil associations that compose the watershed are listed in Appendix III.

The vegetation communities consist of pine, aspen, spruce-fir, and alpine tundra. The watershed receives 51 - 64 cm (20 - 25 inches) of precipitation annually. The frost-free season around the reservoir is 0 - 20 days per year.

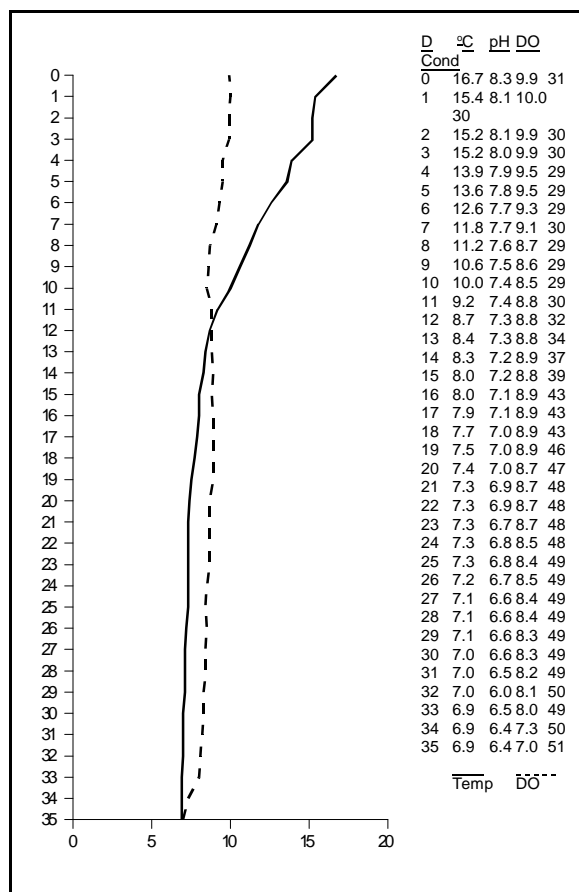
Land use is as follows 95% wilderness, which includes recreation and allotment grazing by sheep and cattle. Of the remaining 5%, 3% is multiple use and 2% is concentrated recreation.

Limnological Assessment

The water quality of Moon Lake is very good. It is considered to be very soft with a hardness concentration value of approximately 10.1 mg/L (CaCO₃). Although there are no overall water column concentrations that exceed State water quality standards, there are reported exceedences on a rare occasion at specific points in the lake. These include occasion elevations of pH or total phosphorus concentrations.

The lake does stratify but it appears to be a weak stratification with a general decline in temperatures throughout the water column as depicted in the August 21, 1991 profile.. Stratification may be stronger and more pronounced at other times during the season, however, data is not available during those times to document it. Current data suggest that the reservoir is currently a nitrogen limited system with fairly low concentration of nutrients present. TSI values indicate the reservoir is oligotrophic in a state of low productivity. During 1989 productivity data indicates that the reservoir was in a state of mesotrophy. The parameter that has skewed the data is the transparency which appears abnormally low. It appears that in August of 1991 there was a significant algal bloom which effected the evaluation. It is therefore apparent that overall the reservoir is probably oligotrophic, it is capable of moderate productivity on a limited basis.

According to DWR no fish kills have been reported in recent years. Historical fishery data (1980 Division of Wildlife Resources) shows Moon Lake to contain both brown (*Salmo trutta*) and rainbow trout (*Oncorhynchus mykiss*) and mountain whitefish (*Prosopium williamsoni*). Moon Lake is



Shannon-Weaver [H'] 1.42
 Species Evenness 0.68
 Species Richness 0.34

The phytoplankton community is dominated with the presence of diatoms, flagellates and green algae. This community supports the water quality assessment of good water quality with low productivity.

Pollution Assessment

Nonpoint pollution sources include grazing, and recreation.

The High Uintas Wilderness is a popular recreational destination for backpackers and mountain climbers. The area immediately around the lake is utilized heavily.

Grazing is permitted throughout the watershed.

There are no active mines within the watershed, but old sites do exist that may leach materials into waterways. Data suggest that they do not pose a treat to water quality.

There are no point sources of pollution in the watershed.

Beneficial Use Classification

The state beneficial use classifications include: culinary water (1C), recreation bathing (swimming) (2A), boating and similar recreation (excluding swimming) (2B), cold water game fish and organisms in their food chain (3A) and agricultural uses (4).

managed as a rainbow trout fishery. If browns are still present in Moon Lake they are not abundant. The lake has not been treated for rough fish competition, so populations of native fishes may still be present in the lake. Recent stocking reports indicate that DWR stocks the lake with approximately 12,500 catchable rainbows annually.

Phytoplankton in the euphotic zone include the following taxa (in order of dominance)

Species	Cell Volume (mm ³ /liter)	% Density By Volume
Pennate diatoms	0.410	51.57
<i>Asterionella formosa</i>	0.179	22.57
<i>Dinobryon divergens</i>	0.073	9.22
<i>Microspora</i> sp.	0.066	8.39
<i>Lagerheimia ciliata</i>	0.022	2.80
<i>Scenedesmus incrassulatus</i>	0.017	2.17
<i>Oocystis</i> sp.	0.016	2.10
Centric diatoms	0.009	1.19
Total	0.792	

Information

Management Agencies

Uinta Basin Association of Governments	722-4518
Division of Wildlife Resources	538-4700
Division of Water Quality	538-6146
Ashley National Forest	377-5780
Duchesne Ranger District	738-2482

Recreation

Dinosaurland Travel Region (Vernal)	789-6932
Duchesne Chamber of Commerce	738-5651/738-2707
Moon Lake Resort	454-3142

Reservoir Administrators

Department of the Interior	-----
Central Utah Water Conservancy District	226-7112

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